that a 7-inch clear aperture of $8\frac{1}{2}$-feet focus, just finished, promises fairly to substantiate what I have represented.

1 *Clifton Villas, Highgate Hill, N.*,
12 *Dec.* 1866.

On the Telescopic Disks of Stars. By G. Knott, Esq.

At the Meetings of the Society in June and December last year the question of the relation between the size of the telescopic disks of stars and the aperture of the telescope attracted some little attention, and it was suggested as desirable that attempts should be made to measure the diameter of the spurious disk, or, in preference, that of the brighter part of the first ring.

Being in possession of a spherical crystal micrometer, which was mentioned by Mr. Dawes as well adapted for the purpose, I have, on several evenings during the past few months, employed it in the measurement of star disks; and although I have not yet succeeded in measuring the diameter of the first ring, I venture to bring the results I have obtained before the notice of the Society, in the hope that they may not be quite without interest.

The micrometer, which was formerly in the possession of Mr. Dawes, differs from that described by Dr. Pearson, in having no field lens; the whole of the magnifying power is, consequently, given by the sphere, and is invariable. The sphere has a diameter of rather more than four-tenths of an inch, and on my Alvan Clark refractor of $7\frac{1}{3}$ inches aperture and 110·6 inches focal length gives a magnifying power of 368. The aperture of the telescope was varied by cardboard diaphragms placed in front of the object-glass. I have for convenience arranged my results in a tabular form, and need only say in explanation that, with the single exception of the 2-inch measures of α *Coronæ Borealis*, the result in each case is the mean of six measures, which were generally fairly accordant.

Table of Observations

Date of Obs.	Star Observed.	Diameter of Disk, as measured with various Apertures.					
		$7^{in}\cdot33$	$6^{in}\cdot00$	$4^{in}\cdot95$	$4^{in}\cdot00$	$3^{in}\cdot00$	$2^{in}\cdot00$
		"	"	"	"	"	"
July 10	α Coronæ Bor.	0·833	..	1·172	..	1·748	2·324
Oct. 22	α Tauri	..	0·846	1·047	1·398	1·772	2·608
	Polaris	..	0·929	1·130	1·395	1·729	2·378
	α Orionis	..	0·852	1·214	1·683	2·162	2·932
Nov. 6	β Cygni A	..	0·995	..	1·414	1·865	..
	β Cygni B	..	0·691	..	1·051	1·425	..
	Polaris	..	0·919	1·246	1·542	1·802	2·480

Date of Obs.	Star Observed.	Diameter of Disk, as measured with various Apertures.					
		$7^{in}\cdot33$	$6^{in}\cdot00$	$4^{in}\cdot95$	$4^{in}\cdot00$	$3^{in}\cdot00$	$2^{in}\cdot00$
		″	″	″	″	″	″
	α Orionis	..	0·888	1·142	1·604	2·038	2·728
Nov. 20	α Lyræ	0·731	0·807	0·991	1·284	1·829	2·435
	β Cygni A	0·666	0·839	..	1·162	..	..
	β Cygni B	0·586	0·643	..	0·948	..	..
28	α Tauri	0·760	0·956	1·144	1·535	1·763	2·564
	α Orionis	0·583	0·786	0·990	1·384	1·909	2·608
	β Orionis	0·583	0·753	..	1·402	..	2·658

Remarks on the Observations.

July 10. Definition good, but sky rather hazy. In addition to the measures recorded in the table I made one set of α *Coronæ*, with $3^{in}\cdot7$ aperture, the resulting diameter of the disk being 1″·470.

October 22. Bright moonlight, Moon near the full. Definition good. I was struck with the fine definition of α *Orionis*. The disk was round and sharp, but the rings bright and troublesome.

November 6. The observations of β *Cygni* and its attendant were a little uncertain, as the stars were unsteady In the case of α *Orionis* I again found the rings bright and troublesome.

November 20. Bright moonlight and a frosty air. The definition of α *Lyræ* was good, but when the measures of β *Cygni* were made, vision had deteriorated.

November 28. Air still and definition good. A white frost. The measures of α and β *Orionis* were made as the Moon was rising. Moon about last quarter.

I shall close with a few general remarks. While I am not inclined to attach any value to the measures, as giving *absolute results*, I think that they are interesting *differentially* as showing a marked and pretty regular increase in the diameter of the apparent disk, as the aperture of the telescope is diminished, — thus agreeing with theory. A few months ago, in reference to the subject of the diameter of star disks, Mr. Baxendell remarked to me, that "it would be interesting to compare the results from stars of different colours." This is certainly a very interesting subject for inquiry; but my own observations have as yet been too few to enable me to draw any trustworthy inferences from them bearing on the point. In conclusion, I will only express the hope that this imperfect paper may serve to direct the attention of some more competent observer to a delicate but most interesting branch of research.

Woodcroft Observatory, Cuckfield,
December 13, 1866.